**REMARKS:**

Claims 33, 34, 35, 37-45 and 47-51 are in the case and presented for consideration.

Claims 1-32, 36 and 46 are canceled and claims 33, 40, 43, 49 and 51 have been amended to better define the invention.

For the reasons that follow, Applicants believe all of the claims are now in condition for allowance.

**Amendments to the Specification and Claims:**

Cancellation of claims from this application does not constitute an admission regarding patentability of the cancelled subject matter. Applicants reserve the right to pursue any subject matter they invented and that is disclosed in the current application, in one or more continuing applications.

Support for amended claims 33 and 43 with respect to limiting the disease or condition to specific cancer types, can be found on page 8, lines 1-3 of the specification as filed (paragraph [0026] of the published application 2007/0072841). Claim 51 has been amended to exclude breast cancer cell, in order to maintain a separation of subject matter between the claims of this application, and the claims of U.S. patent application 10/898,653, now U.S. Patent 7,351,701 to the same inventors.

The specification and claims have also been amended to correct a typographical error in the gene "KU80."

No new matter is added.

**Claim Rejections under 35 U.S.C. 112, second paragraph**

Claims 33-35, 38-45 and 47-50 have been rejected under 35 U.S.C. 112, second paragraph for reasons set forth on page 2 of the Final Action, because it was unclear which diseases are to be treated.

The claims are now believed to be clear in that the diseases or conditions to be treated is one or more of the specified cancers or cancer cells, these being of a type that is caused by a genetic defect in a gene that mediates homologous recombination or HR.

As will be detailed later in these remarks, the inventors have searched for and found support in many publically available references that describe HR gene defects in human cancers. The HR genes include those mentioned in the specification and others which are not.

For these reasons, the Applicants believe that all the claims comply fully with 35 U.S.C. 112, second paragraph.

**Claim Rejections under 35 U.S.C. 112, first paragraph**

Claims 33-36 and 38-51 have been rejected under 35 U.S.C. § 112, first paragraph for reasons set forth on pages 2 and 3 of the Final Action. The claims have now been amended to limit the types of cancers and cancer cells treated to those enumerated in the specification so that Applicants respectfully traverse this rejection as well. Those skilled in the art, with access to the public body of knowledge available on the types of cancers caused by the genetic defect in a gene that mediates homologous recombination (HR), would understand the link between the cancers listed in the specification and these defects, and would therefore have sufficient notice of, and instructions on who to treat and on how to treat these cancers and cancer cells, to satisfy 35 U.S.C. 112, first paragraph.

Independent claim 33 is limited to the treatment of the enumerated cancers that are caused by a genetic defect in a gene that mediates homologous

recombination (HR), and independent claim 43 is limited to the induction of apoptosis of these cancer cells that are defective in a gene that mediates HR. Thus, the claims are not directed to treatment of all cancer generally, but define a specific treatment for specific cancers and cancer cells that are of the type that are caused by HR genetic defects, as disclosed in the specification.

The skilled artisan, for example a physician, is taught that a suitable subject for treatment with the specified inhibitors is one having a defect in a gene that mediates HR. The specification contains numerous examples of genes involved in HR and the inventors have shown that cells defective in a gene that mediates HR are hypersensitive to these inhibitors. This was a surprising and unobvious observation and the scope of the claims is commensurate with the inventors' contribution.

**Claim Rejections under 35 U.S.C. 102(b) and (e)**

Claims 33-51 has been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,548,494 to Webber et al. (Webber) for reasons set forth on page 4 of the Final Action, and claims 35 and 45 have been rejected under 35 U.S.C. 102(e) as being anticipated by the international publication that is equivalent to U.S. published patent application number 2004/0248879 to Canan-Koch et al. (Canan-Koch) for reasons set for on page 5 of the Final Action.

The claims now presented recite limitations not found in either of these references and are therefore not believed to be anticipated or obvious for the reasons to be discusses later in these remarks. The Applicants therefore respectfully traverse these rejections under 35 U.S.C. 102.

It is axiomatic that under U.S. patent law, to anticipate a claim, the reference must teach every element of the claim and a claim is anticipated only if

each and every element as set forth in the claim is found, either expressly described or inherently, in a single prior art reference.

With respect to independent claim 33, both Webber and Canan-Koch are silent as to the claimed limitation of "selecting the mammal having said genetic defect" wherein the genetic defect is in a gene that mediates homologous recombination (HR) and further that is of the type that causes the enumerated cancers. These limitations are not expressed, implied or inherent in the cited references so that the rejection of claim 33 under 35 U.S.C. 102(b) is respectfully traversed.

With respect to independent claim 43, both Webber and Canan-Koch are again silent as to the claimed limitation of "selecting the cells having said genetic defect" wherein the genetic defect is in a gene that mediates homologous recombination and, again, is of the type that caused the enumerated cancers. Since these limitations are not expressed, implied or inherent in the cited references, rejection of claim 43 under 35 U.S.C. 102(b) is also respectfully traversed. Claims 35 and 45 are even more remote from Canan-Koch for the same reasons.

An important concept of the present invention is the surprising and unexpected finding that cancer cells deficient in HR are hypersensitive to certain inhibitors relative to wild type cells (see page 3, lines 18-19).

Thus, the use of the PARP inhibitors of Formulas I-III provides for a method of treatment that is both effective and selective in the killing of certain cancer cells and which can be administered without the need for other treatments such as radiotherapy or chemotherapy. The hypersensitivity to the compounds of Formulas I-III of cells deficient in HR is a surprising effect, which consequently would not be obvious from the cited reference.

As such, one of ordinary skill in the art could not read Webber or Canan-Koch to teach or suggest the method of treatment of claim 33, or inducing apoptosis in affected cells as recited in claim 43, or the invention as defined in the dependent claims.

For the reasons stated above, the Applicants believe that independent claims 33 and 43 as well as their respective dependent claims, are in condition for allowance.

**The Inventors' Search of Published Articles**

Attached to this amendment please find two documents. The first is entitled "Defects of homologous recombination related genes/proteins in human cancers" that lists genes/proteins disclosed in the current patent application at paragraph [0039] of the corresponding published patent application 2007/0072841 and for each gene/protein, the respults of a Medline search carried out to identify publications which link a defect in the gene with a human cancer. The second attachment is a copy of an article entitled "Targeting Fanconi Anemia/BRCA2 Pathway Defects in Cancer: The Significance of Preclinical PharmacogenomicModels" by Eike Gallmeier and Scott E. Kern.

Based on their further review of the literature, the inventors demonstrate that many of the genes on the list are involved in DNA repair pathways other than homologous recombination (HR) e.g. ERCC1 which is associated with nucleotide excision repair, but may also play a part in HR as it is involved in removing cross-links at stalled replication forks. It is also known by those skilled in the art that KU80 forms a heterodimer at DNA DSBs that recruits and activated DNA-PKcs to complete non-homologous end joining. The article by Eike Gallmeier and Scott E. Kern discussed Fanconi defects in cancer.

**Conclusion**

Accordingly the Applicants believe that all the claims are now in condition for allowance. Should there be any issues that have not been addressed to the Examiner's satisfaction, Applicants invite the Examiner to contact the undersigned attorney.

If any fees other than those submitted herewith are due in connection with this response, including the fee for any required extension of time (for which Applicants hereby petition), please charge such fees to Deposit Account No. 14-1431.

Respectfully submitted,

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